

THE CLAIMS:

1. A method of treating a spent potliner after use in an aluminium smelting process, the method comprising crushing and classifying the spent potliner, placing the classified and crushed spent potliner in a furnace at a temperature greater than 450°C, heating the spent potliner to a temperature greater than 450°C, mixing the heated spent potliner with water to produce reaction gases and residue, burning the reaction gases, mixing the residue with water in a well ventilated area for a period of weeks to cure the residue.
2. The method according to claim 1 comprising blending the cured residue with other chemicals and minerals to provide mineral products.
3. The method according to either claim 1 or claim 2 wherein the classified and crushed spent potliner is positioned in a rotary kiln into which air is introduced to ensure an oxygen enriched environment.
4. The method according to claim 3 comprising using thermocouples to control the temperature of the kiln.
5. The method according to claim 4 comprising directing jets of air into the kiln to prevent agglomeration.
6. The method according to any one of the preceding claims comprising exposing the wet mixture in a pile to ambient conditions between 5 and 20°C in a well ventilated location.
7. The method according to claim 6 comprising mixing the pile on a daily basis with total exposure being up to four weeks.

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8. A plant for processing spent potliners according to the method of any one of claims 1 to 7.

5 9. Mineral products comprising chemicals and minerals blended with residue treated by the method in accordance with any one of claims 1 to 7.

10 10. A mineral product according to claim 9 wherein the treated residue is blended with refractory brick waste, crushed anode carbon, dross powder and supplemented with black and/or brown coal and sand in proportion varying in accordance with the end use of the mineral product.

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